

Notice of Allowability

Application No.

10/773,668

Applicant(s)

KEIM ET AL.

Examiner

Art Unit

CUONG H. NGUYEN

3661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the IDS filed on 3/27/2007.
2. ☒ The allowed claim(s) is/are 1-2, and 5-13; claims 10-11 are renumbered as claims 3-4; formal drawings are accepted.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 3/27/07
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

CUONG H. NGUYEN
Primary Examiner
Art Unit: 3661

DETAILED ACTION

1. This Office Action is the answer to the IDS received on 3/27/2007, which paper has been placed of record in the file.
2. Claims 1-13 are pending in this application; wherein claims 3-4 have been canceled.

Priority

3. This application claims a Germany priority (103 04 711.5) of 06 Feb. 2003.

Information Disclosure Statement

4. The submitted IDS filed on 3/27/2007 is considered.

Allowable Subject Matter & Reasons for Allowance

5. Independent claim 1 is patentable over references of Slicker J. M. (EP 628742B), Bartholomaus, and Mannesmann AG because in addition to other claimed limitations, these references do not disclose a method for controlling a vehicle's electromagnetic valve, comprising:
 - altering a clock frequency of the trigger signal by the control device as a function of a performance quantity of the electromagnetic valve, the clock frequency being a function of a set point valve current through the coil and an actual valve current through the coil, wherein the clock frequency at a first set point valve current and the actual valve current is greater than that at a second set point valve current and the actual valve current; and the transfer cross section at at least one of the first set point valve current and the actual valve current is smaller than that at at least one of the second set point valve current and the actual valve current.

6. Independent claim 12 is patentable over references of Slicker J. M. (EP 628742B), Bartholomaeus, and Mannesmann AG because in addition to other claimed limitations, these references do not disclose a method for controlling a vehicle's electromagnetic valve, comprising:

- altering a clock frequency of the trigger signal by the control device as a function of a performance quantity of the electromagnetic valve, and superimposing on the trigger signal a heterodyne signal having a smaller heterodyne frequency in comparison with the clock frequency.

Slicker teaches that clutches, etc. are operated by actuators by pressurized fluid, supplied via solenoid valves. These valves are operated electrically by the pulsed signal, with a short pulse for minimum operating time, fluid being admitted in small increments. Valve operation is checked by monitoring the solenoid back emf. The pulse power supply may be controlled by computer, to provide pulses of sufficient width for incremental actuator operation, with feedback control. Slicker teaches that pulse width modulation may also be improved by same technique for minimize pulse period to lowest duty cycles and yet assuring actuation. Slicker discloses that pulse frequency modulation is used to control brakes and clutches which are operated by fluid pressure actuators controlled by electrically actuated solenoid valves. Short pulse periods for all duty cycles are generated by feedback from the solenoid valve or from the actuator. In one circuit an electrical control triggers a flip-flop which starts solenoid current. In another circuit, a computer control emits a command for a certain pulse period. Actuator pressure is monitored to produce a feedback signal to the computer. If the signal is not received, the pulse period is increased for the next pulse command so that a sufficient pulse period will be found. If

the magnitude of the actuator response exceeds a threshold, the pulse period is decreased for the next pulse command.

Bartholomaeus Reiner et al. teach that pulse frequencies are a function of temperature; therefore, pulse widths are changed according to the temperature.

7. Dependent claims 2, 5-11, and 13 are patentable because of dependencies of independent claims 1, and 12 (in that order).


Conclusion

8. Claims 1-2, and 5-13 are patentable. Claims 10-13 are renumbered as 3-4, 10-11.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CUONG H. NGUYEN whose telephone number is 571-272-6759 (email address: cuong.nguyen@uspto.gov). The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, THOMAS G. BLACK can be reached on 571-272-6956. The Rightfax number for the organization where this application is assigned is 571-273-6759.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


CUONG NGUYEN
PRIMARY EXAMINER